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REPORT OF
THE CODIFICATION COMMITTEE

THE NATIONAL ASSOCIATION
OF CORPORATION SCHOOLS



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THE NATIONAL ASSOCIATION OF CORPORATION SCHOOLS

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THE CODIFICATION COMMITTEE

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REPORT OF THE CODIFICATION COMMITTEE

504

The digest which is presented herewith and the cross index which is made a part of it, are the result of the questionnaire sent out by the Codification Committee early in this fiscal year. The digest is based upon the folders which contain the details of the school work conducted by the members who answered the questionnaire. It is obviously impossible to print all these details as the different methods employed and the different arrangements of the courses would necessitate several volumes in order to work it out. However, the original digest, which is the earlier part of this report, has been arranged so as to refer back to the folders containing the original data, the folders being numbered in accordance with the industrial divisions upon which the whole scheme of indexing has been based. The object of the digest, the indexing and the cross-indexing has been to make it possible for members to look up general practice either in respect of the industry, in respect of a trade division, a school or a course, and it represents a compendium of the present practice without any comment on the efficiency or desirability of that practice.

The folders in which the original material is placed are on hand at the office of the Executive Secretary of the Association and are available for Class "A" members on a loan of a limited time under a system similar to that adopted by a circulating library. A request to the office of the Executive Secretary for the folder on any industry, or the industry folders upon any subject represented in the index, will enable the secretary to send you the complete original data upon which this is based, provided that data is not already in use by another member.

The original data is filed in folders as follows:

- | | |
|----------------------------|-----------------------------|
| 1. Telephone | 8. Machinery |
| 2. Retail Stores | 9. Motor Cars |
| 3. Shipbuilding | 10. Mail Order |
| 4. Printing and Publishing | 11. Hardware Supplies, etc. |
| 5. Insurance | 12. Rubber Goods. |
| 6. Office Supplies | 13. Electric Companies |
| 7. Railroads | 14. Gas and Electric Light |
| | 15. Steel. |

these folders being subdivided as far as possible.

The Committee hopes that this work will be found valuable to the members of the Association as it has attempted to place it on such a basis that it will be readily available for reference.

HARRY TIPPER, *Chairman.*

To secure the necessary information from which to codify the educational courses given by the Class "A" members of The National Association of Corporation Schools, the following questionnaire was sent to all industrial institutions having Class "A" membership in our Association.

QUESTIONNAIRE

Most institutions can be subdivided into the following headings: Factory or production, marketing, accounting, office work and transportation.

- 1 What divisions of your business, as detailed above, do your educational courses cover?
How long has your educational work been in operation?
- 2 (a) Is enrollment optional or compulsory?
(b) Are sessions held on Company time or employees' time, or both; if the latter, state division.
- 3 Which courses are designed to teach trades or professions, and which are designed to equip employees to render better service and to advance to higher positions in your Company?
How many employees have been enrolled in your school?
- 4 (a) What percentage of your employees have completed your courses?
(b) What percentage are now under instruction?
(c) What percentage of those instructed are now in your employ.
- 5 Do you make an educational requirement or can *any* employe receive instruction through your Company School?
- 6 (a) Are employees paid while receiving instruction?
(b) How many hours of instruction per week, month, or year do your employees receive?
- 7 (a) How is your educational department organized?
(b) Is your instructor-in-charge a professional teacher?
(c) Are his assistants employes or professional teachers?
- 8 Is the educational work of your Company conducted in rooms provided by the Company or is the work carried on through the public schools, high schools, Young Men's Christian Associations, colleges or other educational institutions?
- 9 (a) Have you been able to secure satisfactory text-books. If so, kindly give the list of those found most helpful.
(b) If you have found it desirable to prepare your own lesson sheets kindly send us sample sets.

- 10 (a) Do you grant certificates to employes that complete their school work with satisfactory ratings?
 (b) Do you give any other form of reward?
 (c) Are employes' school records considered a basis for promotion?

Note: Kindly send complete curriculum for all courses and if special courses are given covering such subjects as Health, Safety, etc., please give general outline and state results secured. Also, please state if your Company is giving attention to vocational guidance.

INDEX

INDUSTRIES

	PAGE
Telephone	5
Retail Stores	6
Shipbuilding	7
Printing and Publishing	9
Insurance	10
Office Supplies	11
Railroads	12
Machinery	15
Motor Cars	19
Mail Order	21
Hardware Supplies, etc.	25
Rubber Goods	28
Electric Companies	29
Gas and Electric Light	33
Steel	37

TELEPHONE COMPANY

Answers—6.

Divisions

Production, Traffic, Accounting, Office.

Operating—Different companies vary from 6 months to 8 years.

Schools

Class and Correspondence.

Enrollment

Class work—compulsory.

Correspondence—optional.

Object

To equip employes for better service and promotion.

Number enrolled and percentage as to completing course, etc.

(Only one company gives the figures relating to above.)

At Present No. Enrolled	Graduates	Under Instruction	Still Employed
541	416	35%	73%

Rooms and Equipment

Company.

Organization

Principal and such assistants as are necessary.

Instructors

Not professional.

Textbooks—No. (Lesson sheets in folder "Telephone.")

Subjects only those peculiar to telephone installation, repair
and switchboard work.

RETAIL STORES

Answers—2.

School of Marketing (2)

1. Operating 2½ years.

1. Operating 8 years.

Enrollment

Compulsory.

Company's time.

Object of Course

1. To teach our goods, Business methods, policies and personnel of company and develop better service.

1. Develop selling ability.

No. enrolled

215.

3000.

1. Unable to give percentage of completed, under instruction now in employ.

1. Courses continuous, about 50% now in employ.

Enrollment requirements

None.

Payment

1. Paid during instruction. Hours of instruction vary, one hour every two weeks, one hour a week.
1. Paid during instruction. Hours of instruction, fifty hours per week for three weeks, correspondence course three weeks.

Instructors

1. Store instructor in charge; non-professional although teaches in evening high school. No assistants.
1. Both instructor in charge and assistants professional.

Rooms and Equipment

Furnished by Company.

Textbooks

Have found no textbooks that fit our business.

Economist Training School course and all data can get from Trade Journals.

Diplomas

Give no diplomas, rewards (except one gives silver pin after year's work.)

Do not consider records.

For detailed information refer folder (Retail Stores).

SHIPBUILDING

Answers—2.

School

Trade. Covers no particular division.

All trades.

Length of Course

About four years and six years.

Enrollment

1. Compulsory for apprentices; optional for others.
1. Compulsory for all.

Time

2. Employes time.

Object of course

To prepare for higher positions.

No. enrolled

600.

275.

60% completed course.

Practically none.

10% under instruction.

4½% under instruction.

Practically all.

About 55%.

Who may enroll

No educational requirements; anyone between 14 and 20.

Must have grammar school education or its equivalent.

Paid during instruction

2. No.

2. Four hours per week.

Rooms and Equipment

Furnished and maintained by companies.

Shipbuilding classes nearly all held in city buildings or

Y. M. C. A. and Y. W. C. A.

Organization

Director and seven instructors—non-professional employees.

Engineers with previous teaching experience.

Rooms and Equipment

Classes conducted in High Schools, Y. M. C. A., and City's building.

Textbooks

1. None—have found some preliminary work but nothing in presentable form.

1. Norris & Smith—Shop Arithmetic.

Clark's Slide Rule.

Correspondence School textbooks.

Diploma

2. Give diploma; \$100.00 bonus; consider record.

1. No definite curriculum.

1. Campaign of safety and health; talks, moving pictures, bulletin boards, analysis and preventative methods.

Interesting data in letter of March 14, from Newport News Shipbuilding & Dry Dock Co.

PRINTING AND PUBLISHING

ANSWERS

1. Production—Accounting office work—Since July, 1908.
2. (a) With apprentices compulsory.
(b) On company's time.
3. All regular apprentice courses to teach trades and at same time to advance to higher positions if qualified.
High school graduate course is designed to supply efficient executives.
Number enrolled—about 175.
4. (a) Small percentage as our first class graduated August, 1914.
(b) About 20%.
(c) All graduates now in our employ.
5. Grammar-school graduates, at least, to enter our courses, or receive instruction in our school.
6. (a) Yes.
(b) Pre-apprentices—ages between 14 and 16 years—3½ hours daily for two years—Regular apprentices from 2½ to 5 hours weekly.
7. (a) As a regular school. Supervisor of Apprentices in charge; three assistants.
(b) Yes.
(c) *One* professional teacher, two trained shop men, who now act full time as teachers of trade subjects.
8. Company provides school room.
9. (a) Geometry—Hill-Ginn & Co.
English—Knight-American Book Co.
Physics—Mann & Twiss—Scott Foresman & Co.
(b) We have texts in English, Arithmetic, Design and Composition, Bookkeeping and Presswork. We are using most of them in proof form and will publish them later. English will send copy. Arithmetic out of print. Others still in proof form.
10. (a) Yes—diploma.
(b) Bonus—see booklet sent under separate cover.
(c) Yes.

INSURANCE

Answers—3.

1. Marketing—operating—12 years.

1. Marketing and office—7 years.

1. Marketing and office.

Enrollment

2. Voluntary.

1. Compulsory.

Length of Course

1 to 6 weeks.

1 to 30 weeks.

1. No answer.

Time

2. Employes.

1. Company.

Object

Better service.

Number Enrolled

	completed course	under instruction
759	all	25%
1050 (total)	23%	5.9%
17000 (total)	7.30%

Now employed—50%.

Now employed—46%.

Now employed—all.

Enrollment requirements

1. Any employe.

2. Must conform to company standard.

Paid During Course

2. Yes.

1. No.

Instructors

Directors, heads of departments with long experience.

Assistants, Employes with long experience.

Hours of Instruction

One hour a week—30 weeks.

Entire time—6 weeks.

No definite time.

Rooms

Furnished by company.

Textbooks

2. Have own textbooks.

1. Uses.

Baker's "Correct English and How to Use It."

Wentworth's Elementary Algebra.

Hall and Knight's Elementary Algebra.

Diplomas

2. Do not give diplomas.

1. Gives diplomas.

No rewards.

1. Considers records.

2. Considers records only in general way.

For more detailed information refer to folder (Insurance).

OFFICE SUPPLIES

Answers—2.

*Trade School**Course in*

Marketing in operation 8 months.

Production, Marketing, office work, operating, about 30 years.

Enrollment

Optional, except for apprentices and salesmen.

Compulsory.

Time

Agents—company's time; all others employes time.

Company time.

Object

Definite trades in apprentice school—Selling school teaches selling only.

Length of Course

1. { All managers and salesmen have completed course.

Education continuous.

Practically all are in our employ.

1. Does not answer this question.

Enrollment requirements

1. Second year high school course for apprentices, other factory classes, no special requirement.
Salesmen certain experience.
1. All managers and salesmen may receive instruction.

Payment

1. Yes.
1. No.

Hours of instruction

No set time.

Instructors

1. Non-professional director for salesmanship school.
Professional instructor for English.
1. One employe in charge who gives all his time to the work—no assistants.

Rooms

In company's offices.

Partly in rooms provided by company; other parts in co-operative high school and Engineering School.

Textbooks

Write own sales manual.
Pace Course of Business English.
Alexander Hamilton Course.

Diplomas

1. Only to Agent's training class.
1. Have never presented diplomas.
2. No bonuses.
2. Records considered.

BUSINESS RAILROADS

Answers—3.

Divisions

2. Factory and Production.
1. All principal divisions.

Operating

- 11 years.
- 5 years.

Enrollment

- 5½ years.
- 2. Compulsory.
- 1. Optional.

Time

- 3. Company.

Object

- 3. Primarily to teach trades—more efficient service fit for higher positions.

Enrolled

- 1. 950.
70% completed course.
100% under instruction.
71% now in employ.
- 2. Information not available.
- 1. 27.
13 completed course—1-30 of 1%.
10 under instruction—1-40 of 1%.
All graduates now in employ.

Enrollment Requirements

- 1. "Ability and promise." No educational requirement is made, but about four-fifths have been college graduates.
- 1. Must pass entrance examination (examination not indicated, only apprentices eligible).
- 1. "Educational requirement" (not specified).

Paid

- 3. Yes.

Hours of instruction

- 1. Four hours per week for 42 weeks per year.
- 1. Four hours per week throughout four-year course.
- 1. "All their time."

Organization

- 1. Apprenticeship department in charge of supervisor of apprentices, who reports to vice-president. This supervisor has charge of all apprentices in each branch from a central office. Each course in charge of local school instructor and a shop instructor for shop apprentices. At two or more points sometimes in charge of traveling instructor. About fifty instructors in apprenticeship work at present.

1. Supervisor of apprenticeship schools in charge of all schools all lines East. Responsible to Gen. Supt. Motive Power. Reports sent to Gen. Supt. Motive Power and Dean of School of Engineering, Pa., St. College. Apprenticeship instructors report to superintendent Motive Power and respective master mechanics. A shop foreman of apprentices reports to superintendent of motive power.
1. Professional teacher in charge who is also chief clerk to the president and devotes only a part of his time to such work.

Instructors

1. Technical college graduates for mechanical school instructors—shop assistants, selected mechanics who have special fitness for training young men.
1. Instructors have teaching experience or else special ability along these lines.
1. Neither instructor in charge nor assistants are professional teachers.

Rooms and Equipment Company.

Textbooks

1. Unable to find satisfactory textbooks.
1. Textbooks used to some extent—instruction mostly through loose-leaf note books compiled in main office. Hale's Practical Application of Mathematics.
Hale's Practical Mechanics and Allied Subjects.
1. Refer to Southern Pac. Student Course Exhibit "A"
Pgs.—63-64.

Diplomas

1. Yes.
2. No.

Bonuses

1. \$75.00 upon graduation; addition \$75.00 six months later if still in company's employ.
2. No.

Records

3. Records considered.

Courses

- General Course.
- Operation and Maintenance.
- Passenger and Freight Traffic.
- Accounting.

Note—For more detailed information see folder "Railroads."
And books to be read with these courses in Exhibit "A," Southern Pacific Railroad.

BUSINESS—MACHINERY

Answers—6.

Schools

- 5. Apprentice.
- 2. Apprentice, add special apprentice.
- 1. Sales and Office.
- 1. Apprentice, Sales and Office account added.

Enrollment

- Trade School—Four Compulsory.
- Other schools—Optional.

Length of Course

- Including, apprentice, special apprentice, drawing room, two to four years.
- Including sales, office and accounting, one to three years.
- Office, three months to one year.

Number Enrolled

- 1. 257.
 - 19% completed course.
 - 30% now under instruction.
 - 44% now employed.
- 1. 235.
 - 150. Apprentice. 1% have completed course.
 - 45 Drawing room. 25% are employed in shop.
 - 30. Office.
- 1. 150. Trade Apprentices.
 - 25% completed.
 - 6.3% under instruction.
 - 52% employed in company.

1. 20. Office, 50% of employees.
1. 200.
 - 22% completed course.
 - 1.5% under instruction.
 - 81.8% still employed.
1. 5% of employees enrolled—total number come in contact with educational department sometime during service.

Enrollment Requirement

2. Any employe between the ages of sixteen and twenty years who speaks and writes English.
3. Selected for qualifications.
 1. Must have common school course before entering.

Payment

5. Paid while studying.
1. Drawing room—paid.
- Apprentices not paid.

Hours of Instruction

Apprentices: Varies from 50 hours per year to "instruction during all working hours."

Other courses: From three hours to four hours per week.

Instructors

1. Professional instructor—no assistants.
1. Professional instructor with assistants from company for each special division of the work.
3. Under direction of general manager of company with assistants in each line.
1. No regular instructor—in charge factory foreman.

Diplomas and Rewards

4. Give diplomas or certificates, one of these gives bonus of \$100 to apprentices; one no bonus except to drawing room, who receive \$150 bonus. These companies also consider records of employes.
1. No diploma or bonus, and record not considered.
1. Not answered.

Room and Equipment

Furnished and maintained by the six companies.

Textbooks in Trade Schools

3. Firms use no textbooks.

2. I. H. C. Shop Arithmetic.
 Carpenter's Geographical Reader of North America.
 Pool's Gas Engines.
 Ludy's Shop Primer.
 Colvin's Shop Primer.
1. Jameson's Elementary Practical Mechanics.
 Meriman's Strength of Materials.
 Machinery Reference Series—Iron and steel.
 Wentworth's Trigonometry.
 Wentworth's Geometry.
 Wentworth's Algebra.
 Horton's "A High School Course in Physics."
 R. H. Smith's "Textbook of Advanced Machine Work."

Courses in Trade Apprentice Schools

Mathematics

Arithmetic.
 Algebra.
 Trigonometry.
 Machine mathematics.

1. Adds.

Physics

English

Reading, Geographical and Trade Publications.
 Composition (Letter Writing.)
 Writing.

General subjects

Civics
 Geography.
 History of the Industry.

Drawing room Course.

Drawing

3. Mechanical.
1. Adds (Gear Design.)
 (Cam Design.)
2. Add (Machine Design.)
1. Adds Freehand.
 Isometric.

For more detailed information refer to folder "Machinery."

February 23, 1916.

QUESTIONNAIRE FOR THE N. A. C. S.

Outside Sales

Inside Sales

Typists

Clerks

Addition, subtraction, multiplication, division of	{	whole numbers
		common fractions
		decimals.

Proportion.

Percentage.

Interest, simple.

Interest, compound.

Arithmetical progression.

Geometric progression.

Square root.

Cube root.

Metric system.

Mensuration.

Reading.

Penmanship.

English composition.

Business English.

Spelling—usual words.

Spelling—technical words.

Geography, local physical.

Geography, U. S. physical.

Geography, World physical.

Geography, Commercial products, etc.

Geography, Commercial—R. R's. and Shipping.

Freehand Drawing—Nature.

Freehand Drawing—Geometrical lines.

Freehand Drawing—Geometrical objects.

Freehand Drawing—Perspective.

Mechanical Drawing—Geometrical.

Mechanical Drawing—From objects.

Mechanical Drawing—Design.

Music—Vocal.

Music—Reading.

History, U. S. political.

History, Ancient political.

History, European political.

History, Commercial.

History, Industrial.

Physiology.

Science—Biology.

Science—Mechanics.

Science—Heat.

Science—Light.

Science—Sound.

Science—Electricity.

Chemistry.

Foreign Languages

Civics—Intimate relations of pupil with
government; general principles
of government.

BUSINESS—MOTOR CARS

Answers—2.

Schools

2. Apprenticeship—one adds evening.

Operating

1. Nine years.

1. About year.

Enrollment

1. Compulsory for day students—optional for evening.

1. Optional.

2. Company time for day students.

Number Enrolled

1. 70 day students—230 evening class.

1. _____

1. 20% have completed course.

_____under instruction.

40% graduates now in employ.

1. Too new to give this information.

Enrollment requirements

1. Must have finished grammar school course, be of good moral character and good physique.
1. Must have grammar school equivalent for day course. Evening courses, entrance is based on length of service because so many are deficient in the elementary school work.

Paid

2. Yes.

Hours of Instruction

1. 3½ hours per week.
1. 3 hours per week class work.
47 hours per week shop work.

Instructors

1. In charge of professional instructor.
Assistants technical graduates but not experienced in teaching.
1. Professional instructor in charge—assistants are composed of both professional teachers and experienced men in the business.

Rooms and Equipment

2. Furnished by company.

Diplomas and Rewards

1. No diploma or reward; record not considered.
1. Gives diploma and \$100 bonus for perfect attendance; records considered.

Textbooks

1. Have found no textbooks which were satisfactory—have own lesson sheets.
1. Norris & Smith "Shop Arithmetic."
Norris & Craigo "Mathematics."

Subjects in Trade Apprenticeship Courses

Mathematics.
Mechanical Drawing.
Elementary Geometry.
Elementary Trigonometry.

MAIL ORDER

Answers—2.

Schools

Office—1 operating nine years.

1 operating five years.

Enrollment

1 compulsory.

1 optional.

Time

Company's.

Length of course

1 one week to three months.

1 ———

Object

Better service.

Number Enrolled

1 about 1,000 from beginning. 25% completed. Number
under instruction varies. 25% in employ.

1 ———

Paid

Yes.

Hours of Instruction

1 during all their work.

1 one hour per day.

Organization

1. professional teacher with 5 or 6 assistants experienced
in business.

1 director professional—P. S. superintendent; assistants,
college-trained teachers.

Rooms and Equipment

Furnished by company.

Textbooks

1 ordinary P. S. book.

1 not used.

Diplomas

No; no bonus; 1 considers record.

The following subjects are included in the curriculum of the School:

General Clerical Work

Correspondence
 Use of Comptometer
 Rapid Calculation
 Typewriting
 Stenography
 Phonograph
 Transcribing
 Salesmanship
 Proof Reading
 Textiles
 Accounting

Manual Work

Merchandise Listing and Examining
 Package Opening and Examining
 Filling and Inspecting Orders
 Assembling Orders
 Packing and Wrapping

Special Clerical Work

General House System
 Mail Classifying
 Remittance Entering and Detaching
 Ready-made Order Writing and Examining
 Order Advising
 Handling of Held Orders
 Returned Goods Adjusting
 Complaint and General Mail Adjusting
 Auditing Adjustments
 Supervision and Adjusting for Head Clerks
 Mail Examining
 Merchandise Statistics
 Stock Accounting
 Sales Tabulating
 Back Order Writing and Examining
 Efficiency Records
 Traffic
 Teller Work

Made-to-Measure Order Writing and Examining
Order Routing

Continuation Classes (under control of City Board of Education):

Arithmetic
Geography
English
Hygiene
Spelling
Penmanship
Debating
Use of Library
Use of Dictionary
Use of Newspapers and Periodicals
General Cultural Training

INDEX TO INFORMATION FOR CORRESPONDENTS IN SCHOOL

LESSONS	PAGE
<i>Lesson 1</i> —F. 7775.....	1
A.—Number, Copies, Files	1
B.—Enclosures	1
<i>Lesson 2</i> —The Composition of a Letter	2
<i>Lesson 3</i> —The Outline of a Letter	4
A.—Form	4
B.—Cors'. First Letters	5
<i>Lesson 4</i> —Cert. Complaints	6
A.—Denial	6
B.—Awards	7
C.—Cert. Forms	7
<i>Lesson 5</i> —Non-delivery	7
<i>Lesson 6</i> —Shortage of Prods. and Groceries.....	
A.—Concealed	7
B.—Apparent	8
C.—Lost in Transit	8
D.—Customer's Error	8

LESSONS	PAGE
<i>Lesson 7</i> —Dmgd. and Defective Prods. and Groceries....	9
A.—Damaged	9
B.—Defective	9
<i>Lesson 8</i> —Shtg. of Preams.	9
A.—Pack with Notions	9
B.—Pack with Dray Notions	9
C.—On B/L with other Goods	9
D.—Omitted	9
E.—Manifested	10
F.—Mailed	10
G.—Part of Prem. short	10
<i>Lesson 9</i> —Dmgd. and Defective Preams.	10
<i>Lesson 10</i> —Routine	11
A.—Second Shipments	11
B.—Goods to be Returned	12
C.—Certs., Coups., D. Bs	13
D.—Refunds and Reimbursements	14
E.—Tabulations	14
F.—Miscellaneous	15
<i>Lesson 11</i> —Guides to Dictation	16
<i>Lesson 12</i> —Spec. Cors. and Inspectors	17
<i>Lesson 13</i> —Handling Papers at Cors'. Desks	17
<i>Lesson 14</i> —Reading Mail	18
<i>Lesson 15</i> —Stock Paragraphs	19
A.—Acknowledgment of 2nd Credit Order from Debtor	19
B.—Brown Cert. Overdue	19
C.—Change in Wording on Certs. and D. Bs.	19
D.—Coupons	19
E.—Customer Expects Cash Benefits for Credit Orders	19
F.—Customer Expects Us to Pay the Freight.....	19
G.—Fiber Boxes	19
H.—Freight on Manifested Prem. O.K.	20
I.—Freight on Manifested Prem. unknown	20
J.—General Complaint about Freight Charges	20
K.—Present for Cash	20
L.—Price of Order	20
M.—Request to Ship from Chicago	20

LESSONS	PAGE
N.—Return Instructions	20
O.—Space 2 of Order Blank	21
P.—Substitution of Groceries for Prods.	21
Q.—Substitution of Premis. for Prods.	21
R.—Tabulations	21
<i>Lesson 16</i> —Forms	22
A.—Form Letters on Unpd. Accts.	22
B.—Miscellaneous Forms	22

HARDWARE, ETC., SUPPLIES

Answers—5.

Schools

3. Trade apprentice.

 1 adds Special Apprentice, Drafting, English.

 1 adds Office Sales.

1. Office Sales.

1. Office.

Operating

Apprentice. 5 to 10 years.

Drafting. 3 months.

English. 6 months.

Sales and Office. 2 years.

Enrollment

3. Optional.

1. Compulsory.

3. Company time.

1. Apprentice and English, company time.

 Drafting, employe's.

Object

Training for higher positions.

Number Enrolled

	Completed	Under Inst.	Employed
2. 75	47	55	Prac. all
1. 150	60%	all	—
1. 200	—	—	all
	—	75%	70%

Enrollment Requirements

- Elementary education.
- Grammar school course.
- Grammar school course or equivalent.
- Apprentices only—no spec. requirement.

Payment

- 3. Yes.
- 1. No.

Organization

- Director and four assistants. Director, professional. Assistants include both professional and unprofessional teachers.
- In charge of foreman or sub-foreman.
- Instructor in charge, professional; assistants, regular staff.
- Instructor in charge, one of heads of firm—unprofessional.

Rooms and Equipment

- Furnished by companies. 1 encouraged to take Y. M. C. A. courses.

Textbooks

- No textbooks suitable.

Diplomas

- 2. Yes. 1. \$100 bonus. 3. Consider records.
- 2. No. 3. No bonus. 1. No specialty.

*Office Course**Modern Business*

- For executives and clerks

Subjects

- Organization
- Management
- Accounting
- Ideals
- Standards
- Theory
- Records
- Time studies
- Motion studies
- Units efficiency
- Importance
- Stock
- Operations
- Routing

Costs

- For cost clerks and investigators.

Service

- For service and shipping clerks.

	Shipping
	Time records
<i>Letters</i>	Mail
For stenographers and dictators.	Forms
	Composition
	Spelling
	Style
	Dictation
	Notes
	Typewriting
<i>Factory Course</i>	Employment
For foremen.	Discipline
	Planning
	Safety
	Hygiene
	Steel
	Inspection
	Machines
	Operations
<i>English</i>	Speaking and writing factory terms and operations
For foreign-speaking workmen.	Preparation for citizenship
	Health and habits
<i>Mechanics</i>	Tools and machines
Tools and machines.	Shop mathematics
	Blueprint reading
For selected men.	History and use of all articles manufactured
<i>Sales Course: Publicity</i>	Advertising
For adv. dept. and others.	Lectures
	Magazine articles
	Booklets
	Charts
	Employee's activities
<i>Selling</i>	Principles
Selected men.	Channels of trade
	Goods—prices—reports
	Filed studies
	Quotas

Salesmen.

Efficiency bulletins
Conventions
Group conferences
Personal communications
Sales manual

Note.—For more detailed information see folder, "Hardware, Supplies, Etc."

RUBBER GOODS

Answers—3.

Schools

1. One firm has school for factory, accounting and office work, but this school has no definite organization, instruction being given by experienced men from the company and at their convenience. Any employe may enroll. Rooms provided by company. Employes are recommended to take efficiency courses in both public schools and Y. M. C. A. Expect to organize more definite system later.

1. Marketing—just started.

1. The other firm conducts.

Trade School

Enrollment. Compulsory.

Time. Company's.

Who may enroll. Only those selected.

None have completed course, as school is only year and a half old.

8,000 employes.

110 under instruction.

Paid during instruction. Yes.

Time. Two hours per week for nine months.

Organization

Trade school part of labor activities. Professional instructor-in-charge and assistants.

Rooms and Equipment

Furnished by company.

Textbooks

Davis, Lingham, Ginn & Co., "Business English."

Diploma. Given; no other reward; records partially considered.

Course for Foremen

Economics
Organization and management
Business English.

Factory adds Rubber Manufacturing Practice.

Engineering adds Rubber Manufacturing Practice.

Shop mathematics.
Mechanical drawing.
Principles of mechanism.

Aliens. English.

For more detailed information refer to folder, "Rubber Goods."

ELECTRIC COMPANIES

Answers—4.

Division Schools

1. Factory.
1. Factory adds office.
1. Factory adds marketing and accounting.

Operating

Factory, 25 years; office, 2. Varies with course.
Engineering has been operating 18 years.

Enrollment

2. Compulsory.
1. Optional.
1. Compulsory for apprentices.
Selected for electrical engineering.

Time

1. Company for all day courses.
1. Both; varies with different courses.
2. Company time.

Object

4. Better service and advancement.

*Courses**Westinghouse Electric*

- | | |
|----------------|------------|
| 1. Mechanics | } 4 years. |
| Patternmaking. | |
| Toolmaking. | |
| Electrician. | |

General manufacturing and electrical business administration, 1 year.

Western Electric

Engineering
 Manufacturing
 Marketing
 Drafting
 Mechanics
 Tool and instrument making
 Machine operating
 Office work

General Electric

Pattern making
 Moulder
 Blacksmith
 Mathematics
 Drafting
 Drawing
 Engineering
 Engineering, extension course

Westinghouse Air Brake

Mechanics
 Mathematics
 Drawing

Number Enrolled

General Electric, 4,000; others not given

Percentage	Completing	Under Instruction	Still Employ
G.E.	Not available	10%	No data
W.E.	_____	_____	50 to 90%
W.A.B.	_____	_____	_____
W.H.E.	_____	_____	_____

Enrollment Requirements

1. Educational requirement, but character not specified.
1. College or technical graduate for production and engineering courses; at grammar school—high school preferred for apprentices.
2. Must be from 16 to 21 years of age, good reputation, strong physique, strong desire to follow trade; one, simple arithmetic and English; the other, grammar school equivalent.

Paid

2. Yes; graduated scale.
1. Yes; all students in day course.
1. Yes, no; depends upon given courses.

Hours of Instruction

1. Apprentices, 3½ hours class work per week; vocational school varies with number of courses taken.
1. Varies according to courses; majority of courses 2 hours per week.
1. Receive instruction all their working hours.
1. Four hours per week class work.

Organization

1. General committee and subcommittees.
1. Manager of educational department reports to General Educational Committee for engineering and commercial courses; Supervision of Chief Draftsman for drafting; Superintendent of Apprentices for works training.
1. Supervisor of Apprentices reports to General Superintendent.
1. Supervisor and fourteen assistants.

Instructors

1. Instructor-in-charge and assistants, professional.
1. Instructor-in-charge, professional; assistants, both professional and employes.
1. Instructor-in-charge, professional; assistants may be either.
1. Instructor, professional; assistants, engineers, draftsmen, shop foremen, etc., of company.

Rooms and Equipment

4. Company.

*Diplomas*1. Where desired or
necessary

1. No

1. Yes

1. Not answered

Bonus

Yes

No

Yes

—

Records

4. Considered

Text books

1. Working blue prints used in general.

1. No, except for some supplementary study.

1. No.

1. Yes.

Well's Academic Arithmetic.

Well's Essentials of Algebra.

Well's New Plane and Solid Geometry.

Well's New Plane and Spherical Trigonometry.

Wood's Practical Grammar and Composition.

Anthony's Mechanical Drawing.

Slide Rule.

Gordon's High School Course in Physics.

Horton's Shop Mathematics.

Halstead's Metrical Geometry.

Clark & Dennis Elementary Chemistry (high school).

Candy's Analytic Geometry (college).

Osborne's Differential and Integral Calculus (college).

Adam's Descriptive Geometry (college).

Merriman's Mechanics of Materials (college).

Hancock's Applied Mechanics (college).

Weisbach * Herrman's Mechanics of Air (college).

*Subjects**Factory:* Mathematics:

Arithmetic

Algebra

Drafting: adds Plane Geometry

Solid Geometry

Trigonometry

Descriptive Geometry

Mechanics

Strength of Materials and Laboratory Work

Office: Elementary Bookkeeping

Accountancy

Business administration

Business English

Typewriting

Arithmetic

And all subjects peculiar to the electrical and electro-mechanical profession

Note.—For more detailed information see folder, "Electric Companies."

GAS AND ELECTRIC LIGHT COMPANIES.

Answers—4.

School

3. Trade, two of these add Commerce.

1. Technical, Commerce and Accounts.

Operating

1. Technical, 9 years.

Commerce, 5 years.

Accounts, 4 years.

1. Trade and commerce, 4 years.

1. Trade, 9 years.

1. Not specified.

Enrollment

1. Technical School optional.

Trade School compulsory.

1. Optional.

1. Trade, compulsory.

Time

1. Company.

1. "Mostly company."

1. Employee's time.

Object

2. Better service and advancement.

1. Both to teach trade and professions and for better service.

1. Not answered.

Enrolled

1. 1,500
1. 1,240
1. 150
1. Not answered

Number who have completed course

1. Not answered.
1. "Have no data."
1. Course elective; cannot be considered as ever having completed.
2,300 employes, 50% enrolled.
1. 25% completed course.
10% not under instruction.
20% now in employ.

Enrollment requirement

1. Technical course, any employe.
Commercial course, high school course.
Acct., no special requirement.
1. Educational requirement, but not specific.
1. No educational requirement.
1. No educational requirement except the three R's.

Paid

2. Yes.
2. No; courses given outside business hours.

Hours of instruction

1. Technical students devote entire time to trade; class work sessions held in evening.
Commercial, 1½ hours per week.
Accounting, class work in the evenings.
1. 1 class 3 hours daily; others 2½ weekly.
1. Hours depend on course and plans laid down for class work.
1. Varies from 4 to 12 hours per week.

Organization

1. Professional instructor in charge.
Assistants technical men in company qualified to teach in course given.
1. Instructor and assistants, professional men.

1. Under general supervision of educational committee, which consists of six superintendents, usually professional.
1. District organization under supervision of general superintendent.

Rooms and Equipment

4. Provided by company.

Textbooks

1. Not answered.
1. No textbooks used; personal instruction.
1. Standard text material entirely satisfactory.
1. No instruction given on paper.

Diplomas

Yes

Expect to issue

No

Bonuses

No direct bonus

No

No

Records

Not directly considered

No

No

Courses

General education

Business

Accounting

Trades—vocational

Technical and professional

Engineering and operating

Course—General Education

Subjects:

Basic Principles of Individual Efficiency.

Effective Speaking and Business Letter Writing.

Courtesy.

The Value of Right Thinking.

Education—What to Learn.

Self-Development.

What Constitutes Individual Efficiency?

What makes for Success?

Choosing and Analyzing a Theme.

Developing Original Thought.

Framing and Address.

Variety: Preparation for Delivery of an Address.

Correspondence English.

Qualifications of the Business Correspondent—The Business Letter.

Business Course

Commerce.
Shorthand.
Typewriting.
Salesmanship.
Public speaking.
Business Administration.
Advertising.

Accounting

Bookkeeping
Classification of Accounts.
Higher accounting.
Principles of Accounting.
Public Utility Accounting.

Trades—Vocational

Sheet-metal work.
Pattern-Making.
Plating.
Plumbing and Heating.

Technical and Professional

Free-hand Drawing.
Mechanical Drawing; drafting.
Architectural drawing and Structural engineering.
Manufacturing, Distribution and Utilization of Gas.
Utilization of Gas Appliances.
Industrial Fuel.
Electricity.
Electric Meter Engineering.
Electrical Engineering.
Automobile Engineering.
Fire Insurance and Fire Prevention.
Right-of-way Work.
Law.
History and Development of Electricity.

Note—For more detailed information see folder "Gas and Electric Light Companies."

STEEL INDUSTRY

Answer—3.

Schools

1. Trade Apprenticeship. 1 year operating.
1. Trade Apprenticeship. Adds marketing. 3 years operating.
1. Trade Apprenticeship. Adds marketing and Post Graduate. 4 years operating.

Enrollment

Compulsory.

Time

Company.

Object

To teach trade and develop more efficient service.

Number Enrolled

300.

100.

300.

Percentage

Completing	None	Indefinite	Small
Under Instruction	100	$\frac{3}{4}$ of 1%	
Still in Employ	all	Practically all	Practically all

Requirements

Educational requirement but information not specific.

All employes.

Able to read and write.

Paid

Yes.

Hours of Instruction

4 hours per week, 40 weeks.

4 hours per week.

All their time, entire course of $6\frac{1}{2}$ weeks.

Organization

1. Trade and Post Graduate Schools under control mill superintendents—Sales under chief instructor.
1. Superintendent, Assistant and Shop Instructors.

1. Training course committee consisting of chairman, secretary and educational director. Director has two assistants who devote most of their time.

Instructors

1. Director professional, assistants usually taken from force.
1. Instructor in charge professional. Shop instructors, master mechanics and foremen.
1. Instructor in charge not professional—assistants employes.

Rooms and equipment Company.

Textbooks

1. Satisfactory only on steel-making.
Using—Tieman's "Iron and Steel."
Using—Harbison's-Walker's "Brief Treatise on the Open Hearth."
Using Bradley—Stoughton's "Metallurgy of Iron and Steel" for reference books.
Prepare own literature for complete course.
1. Yes—Use Shop Mathematics Course of the Extension Division of University of Wisconsin. Hale's method as supplementary text. Own lesson sheets.
1. No textbooks to suit purpose—have obtained suggestions from the following:
First Steps in Geometry—Wentworth & Hill.
First Science Book—Higgins.
Algebra for Beginners—David Eugene Smith.
Practical Mechanics and Allied Subjects—J. W. L. Hale.
Practical Applied Mathematics—J. W. L. Hale.
(Sample lesson sheets attached.)

Diplomas	Bonus	Records
No	No	To limited extent
Expect to	Promotion	Yes
Yes	Yes	Yes

Vocational Guidance

Subjects

Trade School.
Mathematics.

2. Drawing.
 Sales School.
 Metallurgy.
 Transportation.
 Credit and Collections.

Post Graduate.

 Blast Furnaces.
 Open Hearth Furnaces.
 Semi-finishing Mills.
 Finishing Mills.

Safety First.

Hygiene.

English.

Civil Government.

Good Citizenship.

For additional information see folder "Steel Industry," and
 Bulletin N. A. C. S., June, 1915.

Also year book American Bridge Co.

LIST OF PAPERS PREPARED FOR TRAINING COURSE AMERICAN STEEL AND WIRE COMPANY

SUBJECT	NUMBER OF PAPER
Introductory	
Chemistry	I
Iron Smelting	II
Order Department Work	III (lecture)
Steel Making	IV
Transportation of Products	V (lecture)
Rolling Mills	VI
Wire Drawing Processes	VII
Low Carbon Wire Products	VIII
Iron Sulphate	IX
Galvanizing and Tinning	X
Shafting and Screw Stock	} XI
Straightening and Cutting	
Accounting Department	XII (lecture)
Bale Ties	XIII
Kegs and Hoops	XIV

SUBJECT	NUMBER OF PAPER	
Woven Wire Fence	XV	
Barb Wire Fence	XVI	
Concrete Reinforcement		
Nails	XVII	
Welfare Work	XVIII	(lecture)
Music and Rope Wire	XIX	
Horse Shoes	XX	
Heat Treatments	XXI	
Flat Wire Cold Rolling	XXII	
Inspections and Testing	XXIII	
Odd Shaped and Special Wires	XXIV	
Springs	XXV	
Electro Galvanizing	XXVI	
Physical Properties of Wire	XXVII	
Telephone and Telegraph Wire	XXVIII	
Wire Rope	XXIX	
Credits, Collections and Claims.....	XXX	
Rail Bonds	XXXI	
Electrical Wires and Cables.....	XXXII	

INDEX TO TRADE DIVISION

	PAGE
Schools, General	40
Office Schools	42
Sales Schools	43
Trade Schools	43
Technical and Professional	45
Accounting	45
General Education	46

SCHOOLS—GENERAL

Trade Apprenticeship
 Special Apprenticeship
 Commercial
 Technical

Electric Companies

Trade Apprenticeship
 Special Apprenticeship

- Technical
- Commercial
- Gas and Electric Light*
 - Trade
 - Technical
 - Commercial
- Hardware, Supplies, etc.*
 - Trade Apprenticeship
 - Special Apprenticeship
 - Commercial
- Machinery*
 - Trade Apprenticeship
 - Special Apprenticeship
 - Commercial
- Mail Order*
 - Office
- Motor Cars*
 - Trade Apprenticeship
- Office Supplies*
 - Trade Apprenticeship
 - Commercial
- Printing and Publishing*
 - Trade Apprenticeship
 - Commercial
- Retail Stores*
 - Marketing
- Rubber Goods*
 - Trade Apprenticeship
 - Marketing
 - Commercial
- Railroads*
 - Trade Apprenticeship
- Shipbuilding*
 - Trade Apprenticeship
- Steel*
 - Trade Apprenticeship
 - Commerce
 - Technical

Telephone

Trade	}	Class and Correspondence
Office		

Insurance

Marketing
Office

OFFICE SCHOOLS

Industries

Mail Order
Insurance
Insurance
Hardware Supplies, etc.

Subjects

Elementary Bookkeeping
Accountancy
Business Administration
Business English and Composition
Geography
Arithmetic
Spelling
Penmanship
Typewriting
Hygiene
Debating
Use of Library
Use of Dictionary
Newspapers and Periodicals
Organization
Management
Accounting
Ideals
Standards
Theory of Costs
Records
Time Studies
Motion Studies
Units Efficiency
Stock

Operation
 Routing
 Shipping
 General and Special Clerical Work

MARKETING AND SALES SCHOOLS

Industries

Insurance
 Retail Stores
 Rubber Goods

Subjects

Metallurgy
 Transportation
 Credits and Collections
 History and Use of All Articles Manufactured
 Principles of Selling
 Channels of Trade
 Goods—Prices—Reports
 Filed Studies
 Quotas

TRADE SCHOOLS

Industries

Electric Companies
 Gas and Electric Co.
 Hardware Supplies, etc.
 Machinery
 Motor Cars
 Office Supplies
 Printing and Publishing
 Rubber Goods
 Railroads
 Shipbuilding
 Steel
 Telephone

Courses

Science
 Manufacturing
 Mechanics

Mathematics
Drawing
Drafting
Designing
General Education

Subjects

Arithmetic
Algebra
Geometry—Plane, Solid, Descriptive
Trigonometry
Mechanics
Strength of Materials
Sheet Metal Work
Pattern Making
Plating
Plumbing and Heating
Machine Mathematics
Mechanical Drawing
Tools and Machines
Blue Print Reading
Manufacturing Practice
Principles of Mechanism
Slide Rule
Chemistry
Iron Smelting
Steel Making
Transportation
Wire Drawing
Galvanizing and Tinning
Electrical Wires and Cables
Machine, Gear and Cam Design
Freehand and Isometric Drawing
Reading
Composition
Writing
Geography
History—Political, Commercial, Industrial
Civics
Physiology
Biology

Heat
 Light
 Sound
 Electricity
 Factory Management
 History and Use of All Articles Manufactured
 History of Industry

TECHNICAL AND PROFESSIONAL

Electric Companies
 Gas and Electric Light

Subjects

Higher Mathematics
 Freehand and Mechanical Drawing
 Drafting
 Architectural Drawing
 Structural Engineering
 Manufacture, Distribution and Utilization of Gas
 Utilization of Gas Appliances
 Industrial Fuel
 Electricity
 Electric Meter Engineering
 Electrical Engineering
 Automobile Engineering
 Fire Insurance and Fire Prevention
 Right of Way Work
 Law
 History and Development of Electricity
 Economics

SCHOOL OF ACCOUNTING

Industry

Gas Company

Subjects

Bookkeeping
 Classification of Accounts
 Higher Accounting
 Principles of Accounting
 Public Utility Accounting

GENERAL EDUCATION

Industries

Gas and Electric Light
 Hardware, Supplies, etc.
 Machinery
 Mail Order
 Steel

Schools

Trade
 Office

Subjects

- Mathematics
- English
- Composition
- Geography
- Reading
- Chemistry
- Physics
- Physiology
- History—Political, Commercial, Industrial
- Civics
- Hygiene
- Economics
- Lectures :
 - Basic Principles of Individual Efficiency
 - Effective Speaking and Business Letter Writing
 - Courtesy
 - The Value of Right Thinking
 - Education—What to Learn
 - Self-Development
 - What Constitutes Individual Efficiency
 - What Makes for Success
 - Choosing and Analyzing a Theme
 - Developing Original Thought
 - Framing an Address
 - Variety: Preparation for Delivery of an Address
 - Qualifications of the Business Correspondent

<i>Courses</i>	PAGE
Accounting	47
Marketing	47
Drawing	48
Business	48
Mathematics	49

ACCOUNTING

Industries

Gas and Electric Light Companies
 Printing and Publishing
 Railroads

Schools

Office
 School of Commerce
 Business Schools
 School of Accounting

Subjects

Bookkeeping
 Classification of Accounts
 Higher Accounting
 Principles of Accounting
 Public Utility Accounting

MARKETING

Industries

Electric Companies
 Insurance
 Retail Stores
 Rubber Goods

Schools

Marketing and Sales

Subjects

Metallurgy
 Transportation
 Credit and Collections
 History and Use of All Articles Manufactured
 Principles of Selling
 Channels of Trade

Goods—Prices—Reports
 Filed Studies
 Quotas

DRAWING

Industries

Electric Companies
 Gas and Electric Light
 Machinery
 Motor Cars
 Printing and Publishing
 Rubber Goods
 Steel

Schools

Trade
 Technical

Divisions

Mechanical
 Freehand
 Drafting
 Architectural

BUSINESS

Industries

Electric Companies
 Gas and Electric Light
 Hardware, Supplies, etc.
 Mail Order
 Rubber Goods
 Steel

Schools

Technical
 Office

Subjects

Organization
 Administration
 Management
 Economics
 Salesmanship

Advertising
 Public Speaking
 Typewriting
 Shorthand
 Theory of Costs
 Records
 Time Studies
 Motion Studies
 Units Efficiency
 Stock
 Operation
 Arithmetic
 Geography
 English
 Hygiene

MATHEMATICS

Industries

Hardware, Supplies, etc.
 Electric Companies
 Machinery
 Motor Cars
 Printing and Publishing
 Rubber Goods
 Steel
 Mail Order

Schools

Technical
 Trade
 Office

Subjects

Arithmetic
 Algebra
 Trigonometry
 Shop Mathematics
 Geometry—Plane, Solid, Descriptive

Subjects

Algebra
 Arithmetic

English
 General and Clerical Work
 Geometry
 Transportation
 Typewriting

ALGEBRA

Industries

Electric Companies
 Machinery
 Motor Cars
 Rubber Goods
 Railroads
 Steel

Schools

Trade
 Technical

ARITHMETIC

Industries

Electric
 Gas and Electric Light
 Machinery
 Motor Cars
 Mail Order
 Office Supplies
 Printing and Publishing
 Rubber Goods
 Shipbuilding
 Steel

Schools

Trade
 Office

ENGLISH

Industries

Rubber Goods (for foreman and aliens)
 Hardware, Supplies, etc.
 Office Supplies

Mail Order
 Machinery
 Electric Company

Schools

Marketing
 Trade
 Office

GENERAL AND SPECIAL CLERICAL WORK

Mail Order

School

Office

GEOMETRY

Industries

Electric
 Machinery
 Motor Cars
 Hardware
 Rubber Goods
 Steel

School

Trade
 Technical

TRANSPORTATION

Steel

School

Sales

TYPEWRITING

Industries

Electric
 Machinery
 Mail Order
 Gas and Electric Light

School

Office

INDEX TO COURSES

	PAGE
Divisions—General	52
Enrollment Requirements	54
Courses	56
Subjects	58
Textbooks	61
Hours of Instruction	63
Time	65
Payment	66
Organization	67
Instructors	69
Enrollment	71
Number Enrolled	71

DIVISIONS: GENERAL

Production
 Marketing
 Accounting
 Office
 Transportation

Machinery

Factory
 Sales
 Office
 Accounting

Railroad

Production
 Transportation
 Office

Mail Order

Office

Motor Cars

Factory

Rubber Goods

Factory
 Marketing

Accounting
Office

Electric Companies

Production
Marketing
Accounting
Office

Gas and Electric Light

Production
Engineering
Commercial
Accounting

Steel

Production
Marketing

Office Supplies

Production
Marketing
Office

Printing and Publishing

Production
Accounting
Office

Shipbuilding

Production
Marketing

Retail Stores

Marketing

Telephone

Production
Traffic
Accounting
Office

Hardware, Supplies, etc.

Production
Marketing
Office

Railroads

"All principal divisions"

Machinery

Production

Marketing

Office

Accounting

Insurance

Marketing

Office

ENROLLMENT REQUIREMENTS

Electric Companies

All have educational requirement.

1. Must be college or technical graduate for production and engineering courses; grammar school—high school preferred—equivalent for apprentices.
2. Must be from 16 to 21 years of age, of good reputation, strong physique, and have strong desire for chosen trade; one only requires simple arithmetic and English; the other grammar school equivalent.

Gas and Electric Light

1. Technical course—any employe.
Commercial course, high school course.
Accounting course, no special requirement.
1. Educational requirement, but not specified.
1. Nothing except the three R's.

Hardware, Supplies, etc.

1. Elementary education.
2. Grammar school course or equivalent.
Apprentices only no special requirement.

Machinery

2. Any employe between 16 and 20 years of age.
2. Selected for qualifications.
1. Must have common school course.

Motor Cars

Grammar School course, good moral character and good physique.

For day course, grammar school equivalent.

Evening courses, entrance is based on length of service, because so many are deficient in the elementary school work.

Mail Order

No special requirement to qualify for instruction, although policy is to select high school graduates when applications are made for employment.

Office Supplies

1. Two years of high school for apprentices. Other factory classes no special requirement. Salesmen certain amount of experience.

1. All managers and salesmen may receive instruction.

Printing and Publishing

Grammar school graduates at least.

Retail Stores

None

Rubber Goods

"Only selected employees"

Railroads

1. No educational requirement; ability and promise; but about four-fifths have been college graduates.

1. Only apprentices eligible and they "must pass entrance examination." What his examination is is not indicated.

1. Educational requirement (not specified).

Shipbuilding

1. Anyone between 14 and 20.

1. Must have grammar school education or its equivalent.

Steel

1. Educational requirement, but information not specific.

1. All employees.

1. Able to read and write.

Telephone

Any employe.

Insurance

1. Any employe.
2. "Must conform to company standard."

COURSES

Electric Companies

Blacksmith
 Business Administration
 Drafting
 Drawing
 Electricity
 Engineering
 Engineering Extension
 Manufacturing
 Marketing
 Machine operating
 Mathematics
 Mechanics
 Moulding
 Pattern Making
 Tool Making
 Office Work

Gas and Electric Light

Accounting
 Business
 Engineering and Operating
 General Education
 Technical and Professional
 Trades, vocational

Hardware, Supplies, etc.

Costs. Letters. Mechanics
 Modern Business. Factory.
 Service. English.

Insurance

Marketing

Machinery

Mathematics
 Physics
 English
 Drawing

Motor Cars

Mathematics.
 Drawing.

Mail Order

General Clerical Work.
 Special Clerical Work.
 Manual Work.
 General Education.

Office Supplies.

Trade Apprenticeship.
 Office Work.

Printing and Publishing

Mathematics.
 Physics.
 Accounting.
 Art and Press Work.

Retail Stores

Marketing.

Rubber Goods

Economics.
 Organization and Management.
 Engineering.
 Rubber Manufacturing.
 Shop Mathematics.
 Mechanical Drawing.
 Principles of Mechanism.
 For Aliens in English.

Railroads

General course.
 Operation and Maintenance.
 Passenger and Freight Traffic.
 Accounting.

Shipbuilding

Fundamentals.
 Citizenship.

Steel

Mathematics.
 Drawing.
 Manufacturing.
 Business operation.
 General.

SUBJECTS

Trade Schools

Arithmetic.
 Algebra.
 Plane Geometry.
 Solid Geometry.
 Descriptive Geometry.
 Trigonometry.
 Mechanics.
 Strength of Materials.
 Sheet Metal Work.
 Pattern Making.
 Plating.
 Plumbing and Heating.
 Machine Mathematics.
 Mechanical Drawing.
 Tools and Machines.
 Blueprint Reading.
 Manufacturing Practice.
 Principles of Mechanism.
 Slide Rule.
 Chemistry.
 Iron Smelting.
 Steel Making.
 Transportation.
 Wire Drawing.
 Galvanizing and Tinning.
 Electrical Wires and Cables.
 Reading.
 Composition.
 Writing.
 Civics.

Geography.
 History of Industry.
 Machine, Gear and Cam Design.
 Freehand and Isometric Drawing.
 History—Political, Commercial, Industrial.
 Physiology.
 Science—Biology.
 Science—Mechanics.
 Science—Heat.
 Science—Light.
 Science—Sound.
 Science—Electricity.
 Factory Management.
 History and use of all articles manufactured.

Marketing and Sales School

Metallurgy.
 Transportation.
 Credit and Collections.
 History and Use of All Articles Manufactured.
 Principles of Selling.
 Channels of Trade.
 Goods—Prices—Reports.
 Filed Studies.
 Quotas.
 Efficiency Bulletins.
 Conventions.
 Group Conferences.
 Personal Communications.
 Sales Manual.

Office

Elementary Bookkeeping.
 Accountancy.
 Business Administration.
 Business English.
 Typewriting.
 Arithmetic.
 Geography.
 English.

Hygiene.
 Spelling.
 Penmanship.
 Debating.
 Use of Library.
 Use of Dictionary.
 Use of Newspapers and Periodicals.
 Organization.
 Management.
 Accounting.
 Ideals.
 Standards.
 Theory of Costs.
 Records.
 Time Studies.
 Motion Studies.
 Units Efficiency.
 Stock.
 Operation.
 Routing.
 Shipping.
 Composition.
 General and Special Clerical Work.

Technical and Professional

Freehand Drawing.
 Mechanical Drawing.
 Drafting.
 Architectural Drawing.
 Structural Engineering.
 Manufacture, Distribution and Utilization of Gas.
 Utilization of Gas Appliances.
 Industrial Fuel.
 Electricity.
 Electric Meter Engineering.
 Electrical Engineering.
 Automobile Engineering.
 Fire Insurance and Fire Prevention.
 Right-of-Way Work.
 Law.

History and Development of Electricity.
Economics.

Business School

Commerce.
Shorthand.
Typewriting.
Salesmanship.
Public Speaking.
Business Administration.
Advertising.

School of Accounting

Bookkeeping.
Classification of Accounts.
Higher Accounting.
Principles of Accounting.
Public Utility Accounting.

General

Basic Principles of Individual Efficiency.
Effective Speaking and Business Letter Writing.
Courtesy.
The Value of Right Thinking.
Education—What to Learn.
Self-Development.
What Constitutes Individual Efficiency.
What Makes for Success.
Choosing and Analyzing a Theme.
Developing Original Thought.
Framing an Address.
Variety: Preparation for Delivery of an Address.
Qualifications of the Business Correspondent.

TEXTBOOKS

Electric Companies

Well's Academic Arithmetic.
Well's Essentials of Algebra.
Well's New Plane and Solid Geometry.
Well's New Plane and Spherical Trigonometry.
Wood's Practical Grammar and Composition.

Anthony's Mechanical Drawing.
 Slide Rule.
 Gordon's High School Course in Physics.
 Horton's Shop Mathematics.
 Halstead's Metrical Geometry.
 Clark & Dennis Elementary Chemistry.
 Candy's Analytical Geometry.
 Osborne's Differential and Integral Calculus.
 Adam's Descriptive Geometry.
 Merriman's Mechanics of Materials.
 Hancock's Applied Mechanics.
 Weisbach & Herrman's Mechanics of Air.

Gas and Electric Light Companies

Hardware, Supplies, etc.

Not used.

Insurance

Baker's "Correct English and How to Use It."
 Wentworth's Elementary Algebra.
 Hall & Knight's Elementary Algebra.

Machinery

I. H. C. Shop Arithmetic.
 Carpenter's Geographical Reader of North America.
 Pool's Gas Engines.
 Ludy's Shop Primer.
 Colvin's Shop Primer.
 Jameson's Elementary Practical Mechanics.
 Meriman's Strength of Materials.
 Machinery Reference Series—Iron and Steel.
 Wentworth's Trigonometry.
 Wentworth's Geometry.
 Wentworth's Algebra.
 Horton's—A High School Course in Physics.
 R. H. Smith's "Textbook of Advanced Machine Work."

Motor Cars

Norris & Smith "Shop Arithmetic."
 Norris & Craigo "Mathematics."

Mail Order

Use ordinary Public School books.

Office Supplies

Pace "Course of Business English."

Alexander Hamilton Course Textbooks.

Printing and Publishing

Hill-Ginn & Co. Geometry.

Knight-American Book Co. English.

Mann & Twiss and Scott Foresman & Co. Physics.

Use own books for—English.

Use own books for—Arithmetic.

Use own books for—Design and Composition.

Use own books for—Bookkeeping and Presswork.

Retail Stores

Do not use.

Rubber Goods

Davis, Lingham, Ginn & Co. "Business English."

Railroads

Hale's Practical Application of Mathematics.

Hale's Practical Mechanics and Allied Subjects.

Shipbuilding

Norris & Smith. Shop Arithmetic.

Clark's Slide Rule.

Correspondence School Textbooks.

Steel

Tieman's "Iron and Steel."

Harbison-Walker's "Brief Treatise on the Open Hearth."

Bradley-Stoughton's "Metallurgy of Iron and Steel."

HOURS OF INSTRUCTION

Electric Companies

1. Apprentices $3\frac{1}{2}$ hours class work per week.

Vacational school varies with number of courses taken.

1. Varies according to courses—majority 2 hours per week.

1. All working hours.

1. Four hours per week class work.

Gas and Electric Light

1. Technical students devote entire time to trade.
Class work sessions held in evening.
Commercial, $1\frac{1}{2}$ hours per week.
Accounting—class work in evening.
1. One class three hours daily, others $2\frac{1}{2}$ per week.
1. Depends on course and plans laid down for class work.
1. Varies from four to twelve hours per week.

Hardware, supplies, etc.

Only one or two companies specify the hours and these are short periods of from $\frac{1}{2}$ to 1 hour—others receive instruction all during working hours.

Machinery

Apprentices—Varies from 50 hours per year to instruction during all working hours.
Other courses from three hours to four hours per week.

Motor Cars

Three hours per week class work.
Forty-seven hours shop work.

Mail Order

1. "During all their work."
1. One hour per day.

Office Supplies

No set time.

Printing and Publishing

"Pre-Apprentices"—Three and one-half hours daily.
"Regular Apprentices"—Two and one-half to five hours daily.

Retail Stores

Vary, one hour every two weeks.
Vary, one hour every two weeks.
Vary, fifty hours per week for three weeks.
Correspondence course three weeks.

Rubber Goods

Two hours a week for nine months.

Railroads

1. Four hours per week, forty-two weeks per year.
1. Four hours per week throughout four year course.
1. "All their time."

Shipbuilding

Four hours per week.

Steel

Four hours per week, forty weeks.

Four hours per week.

All their time, entire course of six and one-half weeks.

Telephone

Not specified.

Insurance

One hour per week—thirty weeks.

Entire time—six weeks.

No definite time.

TIME

Industry	Company	Varies with courses	Employee's
Electric	3	1	
Gas and Electric Light..	2		1
Hardware, etc.	3	1	
Machinery	4	1	
Motor Cars	Company		
Mail Order	Company		
Office Supplies	Company		
Printing and Publish....	Company		
Retail Stores	Company		
Rubber Goods	Company		
Railroads	Company		
Shipbuilding	Company		Employee's
Steel	Company		
Telephone	Company		
Insurance	2		1

PAID WHILE UNDER INSTRUCTION?

Electric Companies

1. Yes, graduated scale of wages.
1. Yes, all day students.
1. Yes and no—depends upon given course.

Gas and Electric Light

2. Yes.
2. No—courses given outside business hours.

Hardware, Supplies, etc.

3. Yes.
1. No.

Machinery

5. Paid.
1. Drawing-Room students paid.
Apprentices not paid.

Motor Cars

- Yes.

Mail Order

- Yes.

Office Supplies

1. Yes.
1. No.

Printing and Publishing

- Yes.

Retail Stores

- Yes.

Rubber Goods

- Yes.

Railroads

- Yes.

Shipbuilding

- No.

Steel

- Yes.

Telephone

- No.

Insurance

2. Yes.
1. No.

ORGANIZATION

Electric Companies

1. General committee and sub-committees.
1. General Educational Committee to whom Manager of Educational Department reports for Engineering and Commercial Course; Chief Draftsman for Drawing; Superintendent of apprentices for works training.
1. Supervisor of Apprentices reports to General Superintendent.
1. Supervisor and fourteen assistants.

Gas and Electric Light

2. Instructor in charge and assistants.
1. Under general supervision of educational committee, which consists of six superintendents, usually professional men.
1. District organization under supervision of general superintendent.

Hardware, Supplies, etc.

- In charge of director and four assistants.
- In charge of foreman or sub-foreman.
- Instructor in charge with assistants.
- Head of firm in charge.

Insurance

The educational work of each department is in charge of head of department with assistants.

Machinery

1. Under direction of professional instructor—no assistants.
1. In charge professional instructor with assistants from company for each special division of the work.
3. Under direction of general manager of company with assistants in each line.
1. No regular instructor—in charge factory foreman.

Motor Cars

In charge of professional instructor and assistants who are technical graduates.

Mail Order

Professional teacher with five or six assistants who are experienced in the business.

Director, Public School Superintendent.

Assistants, college trained teachers.

Office Supplies

Non-professional director in charge salesmanship school; professional instructor for English course.

Printing and Publishing

Have a regular school—supervisor of apprentices in charge; three assistants.

Retail Stores

Both instructor in charge and assistants professional.

Non-professional (although he teaches in evening high school) in charge; no assistants.

Rubber Goods

Trade school part of Labor Activities; Professional instructor in charge and assistants.

Railroads

1. Apprenticeship department in charge of supervisor of apprentices, who reports to vice-president. This supervisor has charge of all apprentices in each branch from a central office. Each course in charge of local school instructor and a shop instructor for shop apprentices. Two or more points may be in charge of traveling instructor. About fifty instructors in apprenticeship work at present.

1. Supervisor of apprenticeship schools in charge of all schools all lines East. Responsible to General Superintendent Motive Power. Reports sent to General Superintendent Motive Power and Dean of School of Engineering, Penn. State College.

Apprenticeship instructors report to superintendent Motive Power and respective master mechanics. A shop foreman of apprentices reports to superintendent of motive power.

Railroads

1. Professional teacher in charge who is also chief clerk to the president and devotes only a part of his time to such work.

Shipbuilding

Director and seven instructors—non-professional employes.

Engineers with previous teaching experience.

Steel

1. Trade and post graduate schools under control mill superintendents; Sales under chief instructor.
1. Superintendent, assistant and shop instructors.
1. Training course committee consisting of chairman, secretary and educational director. Director has two assistants who devote most of their time to this work.

Telephone

Principle and such assistants as are necessary.

INSTRUCTORS

Machinery

2. Professional instructor—assistants not professors.
1. General Manager director in charge with assistants in each line.
1. No regular instructor—in charge of factory foreman.

Railroads

1. Technical college graduates for mechanical school instructors—Shop assistants selected—mechanics who have special fitness for training young men.
1. Instructors have teaching experience or special ability along these lines.
1. Neither instructor in charge nor assistants are professional teachers.

Hardware Supplies, etc.

2. Director professional, assistants not professional.
2. Not professional.

Telephone

Not professional.

Retail Stores

Not professional.

Shipbuilding

Not professional.

Engineers with previous teaching experience.

Publishers

One professional teacher, two trained shop men for give full time to trade subjects.

Office Supplies

1. Non-professional director for salesmanship.
- Professional instructor for English.

Steel

3. Director professional—assistants usually taken from foreman.

Gas and Electric Light

1. Professional instructor in charge.
- Assistants technical men in company.
1. Instructor and assistants professional.
1. Under general supervision of educational committee, usually professional.
1. Usually professional.

Electric Company

3. Instructors in charge professional.
2. Assistants both.

Rubber Goods

Professional in charge.

Motor Cars

Professional in charge. Assistants both.

Mail Order

1. Professional in charge.
1. Director-in-charge and assistants professional.

Insurance

Instructors and Assistants men with long experience in the business.

ENROLLMENT

Compulsory for Apprentices, optional for others.

Electric.

Gas and Electric Light.

Machinery.

Office Supplies.

Printing and Publishing.

Railroads.

Shipbuilding.

Compulsory in

Mail order.

Motor Cars (day students, evening optional).

Retail Stores.

Rubber Goods.

Steel.

Telephone (Class work, correspondence optional).

Insurance: 2 Voluntary, 1 Compulsory.

NUMBER ENROLLED

Electric Companies

1. 4000; others not given.

Completing Course, information not available.

Under Instruction, 10%.

Still employed. No data.

Gas and Electric Light

1500.

1240.

150.

1. 25% completed course.

10% under instruction.

20% now in employ.

Hardware, Supplies, etc.

75. 47 completed course.

55 under instruction.

Practically all in employ.

150. 60% completed course.

All under instruction.

200. All in employ.

Machinery

257. 19% completed course.

30% now under instruction.

44 now employed.

235. 25% are employed in shop.

150. 25% completed course.

6.3% under instruction.

52% employed in company.

20. 50% of employes.

200. 22% completed course.

1.5% under instruction.

81.8% still employed.

5% of employes enrolled—total number come in contact with educational department sometime during service.

Motor Cars

1. 70 day students.

230 evening class.

1. 20% completed course.

— under instruction.

40% graduates now in employ.

Mail Order

About 1000 from the beginning.

25% completed course.

Number under instruction varies.

25% still in employ.

Office Supplies

Educational course practically continuous.

All managers and salesmen have completed course.

Practically all are in employ.

Printing and Publishing

Small percentage has completed course.

About 20% under instruction.

All graduates now in employ.

Retail Stores

No definite information given.

Railroads

1. 950.
70% completed course.
100% under instruction.
71% now in employ.
1. 27.
13 completed course.
10 under instruction.
All graduates in employ.

Shipbuilding

600.
60% completed course.
10% under instruction.
Practically all now in employ.
- 275:
Practically none have completed course.
4½% under instruction.
About 55% still in employ.

Steel

100.
None have completed course.
100 under instruction.
All in employ.
Two companies have 300 students enrolled but other data is very indefinite.

Telephone

541.
416 have completed course.
35% of all employes are under instruction.
73% still employed.

Insurance

759.
All have completed course.
25% under instruction.
50% now employed.

1050 (total).

23% have completed course.

5.9% under instruction.

46% now employed.

17000.

7.30% completed course.

—— under instruction.

All now employed.

	DIPLOMAS	BONUS	RECORDS
Electric Companies.....	Where desired or necessary No. Yes	Yes No. Yes	Considered Considered Considered
Gas and Electric Light....	Yes No. Expect to issue	No. No. No.	Not considered Considered Considered
Hardware, Supplies, etc....	2 yes 2 no	1 yes 3 no	3 considered 1 not considered
Machinery.....	4 yes 1 no	2 yes 3 no	5 not considered
Motor Cars.....	No Yes	No Yes	Not considered Considered
Mail Order.....	No	No	Considered
Office Supplies.....	To agent's training class No	2 no	2 not considered
Printing and Publishing...	Yes	Yes	Considered
Retail Stores.....	No	No	Not considered
Rubber Goods.....	Yes	No	Partially considered
Railroads.....	1 yes 2 no	1 yes 2 no	3 considered
Shipbuilding.....	Yes	Yes	Considered
Steel.....	1 no 1 yes 1 expects to	No Yes Promotion	3 yes
Telephone.....	No	No	No
Insurance.....	2 no 1 yes	3 no	1 yes 2 only in general way





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